REMARKS

In the Office Action, dated March 2, 2004, the Examiner states that Claims 1-4 are pending and Claims 1-4 are rejected. By the present Amendment, Applicants amend the claims.

In the Office Action, Claim 1 is rejected under 35 U.S.C. § 102(b) as anticipated by US 6,068,914, Boire et al. Claim 1 is also rejected under 35 U.S.C. § 102(a) as anticipated by US 6,174,599, Boire et al. Claims 2-4 are rejected under 35 U.S.C. 103(a) as unpatentable over US 6,174,599 in view of US 5,530,581, Cogan and US 6,068,914.

Since the Applicants have cancelled the previously pending claims each of these rejections are overcome. However, the Applicants make the following comments regarding the new Claims 5-7 in view of these cited references.

New Claims 5, 6 and 7 are substantially the same as cancelled Claims 2, 3 and 4, respectively, with a clarification of the words "silica layer" to "silicon oxycarbide layer" which would be readable from its composition. As claimed in newly added Claim 5, the present invention relates to an antireflection film comprising a substrate film and an antireflection multiple layer provided thereon, wherein said antireflection multiple layer comprises a combination of an organic silicon layer (A) and at least one layer selected from a silicon oxycarbide layer (B) or a silicon oxycarbide layer (C). Each layer (A), (B) and (C) has a specific composition and a refractive index as follows:

(A) has a composition represented by SiOxCy:H (x = 1.6-1.9 and y = 0.2-1.0) and a refractive index of 1.40-1.46 (λ = 550 nm) and is located as an outer layer of the antireflection film;

(B) has a composition represented by SiOaCb (a = 0.7-1.7 and b = 0.2-1.4) and a refractive index of 1.55-1.80 (λ = 550 nm); and

(C) has a composition represented by SiOdCe (d = 0.5-0.9 and e = 1.0-2.0) and a refractive index of 1.80-2.50 (λ = 550 nm), and at least one of (B) and (C) is located between the substrate and the layer (A).

USP '914 discloses a glazing pane having an antireflection coating which comprises a glass substrate 1 provided with a two-layer coating comprising a high-

index first layer 2 covered by a low-index second layer 3 (FIG. 1a), or with a three-layer coating comprising intermediate-index first layer 4 covered by a high-index second layer 5 and by a low-index third layer 6 (FIG. 1b), or with a four-layer coating comprising an alternation of two high-index layers 7, 9 and two low-index layers 8, 10 (FIG. 1c) (col. 9, lines 57-67). As an actual example, SiOxCy having a refractive index of approximately 1.73 is used as an intermediate-index first layer with TiO_2 having a refractive index of 2.45 as a high-index second layer and SiOA1F having a refractive index of 1.48 as a low-index third layer in the three-layer coating shown in FIG. 1b (col. 10, EXAMPLE 1). Incidentally, there is no reference or description in USP '914 regarding the actual composition of said SiOxCy.

There is no disclosure or suggestion at all in USP '914 regarding the use of the organic silicon layer (A) having a specific composition represented by SiOxCy:H (x = 1.6-1.9 and y = 0.2-1.0) as a low refractive index of 1.40-1.46, which is located as an outer layer of an antireflection film, as claimed in the present invention, let alone in combination with the silicon oxycarbide layer (B) or (C), each having a specific composition represented by SiOaCb (a = 0.7-1.7 and b = 0.2-1.4) and a composition represented by SiOdCe (d = 0.5-0.9 and e = 1.0-2.0), respectively, which is located between the substrate and the outer layer of an antireflection film.

USP '599 discloses a glazing panel comprising a transparent substrate 1 provided with functional, conductive and/or low-emissivity transparent then film 3, with intermediate film 2 having a decreasing refractive index gradient through its thickness which is placed between the substrate 1 and the functional film 3 and further the external film 4, which is deposited on the functional film 3 (FIG. 1).

Although it is disclosed in USP '599 that the external film has a refractive index of 1.4-1.7 and can be comprised of silicon oxycarbide among a lot of other materials, which may be formed using organosilicon precursors (col. 4-5, lines 64-33), there is no disclosure or suggestion at all in USP '599 regarding the use of the organic silicon layer (A) having a specific composition represented by SiOxCy:H (x = 1.6-1.9 and y = 0.2-1.0) as an outer layer in combination with the silicon oxycarbide layer (B) or (C), each having a specific composition represented by SiOaCb (a = 0.7-1.7 and b = 0.2-1.4) and a composition represented by SiOdCe (d = 0.5-0.9 and e =

1.0-2.0), respectively, which is located between the substrate and the outer layer, as mentioned above.

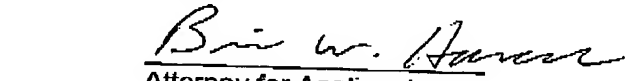
USP '581 relates to an electro-optical device comprising a series of thin films with an electrically controllable optical state provided with a protective overlayer that has a high optical transmittance and high resistance to penetration by H_20. Said protective overlayer is a film of amorphous silicon oxycarbide (a-SiOC:H) having an 0 to C ratio such that the optical absorption edge of the a-SiOC:H is 3 eV or greater and the H_20 transport through a 500 nm thick film of a-SiOC:H is 10^{12} molecules/cm^2 –s or less (ABSTRACT).

There is no disclosure or suggestion at all in USP '581 to combine its disclosure of a-SiOC:H with USP '599 to create the antireflection film as claimed in the present application.

In light of the foregoing response, all the outstanding objections and rejections have been overcome. Applicants respectfully submit that this application should now be in better condition for allowance and respectfully requests favorable consideration.

Respectfully submitted,

May 28, 2004
Date



Attorney for Applicant
Brian W. Hameder
c/o Ladas & Parry
224 South Michigan Avenue
Chicago, Illinois 60604
(312) 427-1300
Reg. No. 45613